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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/733,861	12/11/2003	Frederic Hayem	16135US02	8099

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MCANDREWS HELD & MALLOY, LTD
500 WEST MADISON STREET
SUITE 3400
CHICAGO, IL 60661

EXAMINER	
CASCA, FRED A	

ART UNIT	PAPER NUMBER
2617	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/733,861	HAYEM ET AL.	
	Examiner	Art Unit	
	FRED A. CASCA	2617	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *10 June 2008*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-7,12-18 and 27-30* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-7, 12-18 and 27-30* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

1. This action is in response to applicant's amendment filed on June 10, 2008. Claims 1-7, 12-18 and 27-30 are still pending in the present application. **This Action is made FINAL.**

Claim Rejections - 35 USC § 112

2. Applicant's arguments with reference to the rejection of claims 27-30 under 35 U.S.C. 112, first paragraph is persuasive and, therefore, the rejection of claims 27-30 under 35 U.S.C. 112, first paragraph is withdrawn.

Response to Arguments

3. Applicant's arguments with respect to claims 27-30 have been considered but are moot in view of the new ground(s) of rejection.

4. Applicant's arguments with respect to claims 1-7 and 12-18 have been considered but they are not persuasive.

With respect to claims 1 and 13, see page 27 of remarks, the applicant argues that the combination of Neumann/Kransmo does not disclose "enabling switching between bearers" and "maintaining bearer connections during said switching," the examiner respectfully disagrees.

> The element "enabling switching between bearers" is simply interpreted as enabling switching between different protocols, for example, switching from a 3G communication system protocol to a 2G communication system protocol.

In mobile communication systems, the process of switching a communication session from one network to another network is known as “handoff” or “handover” or “cell selection" under certain circumstances.

The Wikipedia definition of handover is “the process of transferring an ongoing call or data session from one channel connected to the core network to another.” A textbook definition of handover is: "*If a mobile unit moves out of range of one cell and into the range of another during a connection,* ***the traffic channel has to change to one assigned to the BS in the new cell*** *... The system makes this change without either interrupting the call or alerting the user,*" (see Wireless Communications And Networks by William Stallings, ISBN 0-13-040864-6, specifically pages 291 and 293).

Kransmo discloses handover of a dual-mode wireless terminal between two different networks. Kransmo further teaches switching (handover) from a 3G communication system to a 2G communication system where the 3G communication system utilizes 3G communication protocols and the 2G communication system utilizes 2G communication protocols (see Kransmo col. 1, lines 50-67 and col. 2, lines 1-67). Thus, when the dual-mode wireless device of Kransmo is switched (handed over) from a 3G network to a 2G network, the protocols (bearers) are also switched from 3G protocol to 2G protocol so that the dual-mode device can operate in the 2G network. Thus, Kransmo's multimode processor enables switching between bearers.

The element “maintaining bearer connections during switching" is also disclosed by Kransmo.

The dual-mode wireless device of Kransmo performs handover (switching) from a 3G network to a 2G network and the handover process is designed such that the switching between networks takes place without interrupting or dropping of the call (see definition of handover above), thus the connection to networks is maintained during the handover (switching).

Further, a person of ordinary skill in the art would know that 3G communication networks use soft handover. Soft handover is described in 3G TR 25.922 v.3.1.0 (200-03) at Chapter 5.1.4 and also in textbook by Jon W. Mark and Weihua Zhuang (ISBN: 0-13-040905-7), page 211. There, soft handoff (soft handover) is described as a handover in which the mobile device can simultaneously communicate with several networks. Thus, during the soft handover (switching), the dual-mode device of Kransmo can have simultaneous connections to both 3G and 2G networks and with their respective protocols.

Further, the limitation “during switching” is not clearly defined. The element “during switching” could be from the moment that a 2G network with stronger signal strength is detected until handover to 2G network is completed, or it could be the instant that the actual switching (handover) takes place.

Therefore, Kransmo’s teachings of handover from a 3G network to a 2G network reads on the limitations, “enabling switching between bearers” and “maintaining bearer connections during said switching."

Claim Rejections - 35 USC § 112

5. The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

6. Claim 30 is rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. Independent claim 5 has been amended to contain new matter. The phrase "from said host baseband processor via said data communication channel" added to independent claim 5 does not appear to be supported by the specification as originally filed.

Claim Rejections - 35 USC § 103

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

8. Claims 1-2, 4-7, 12-14 and 16-18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Neumann et al (U.S. Pub. No. 2002/0141441 A1), in view of Kransmo (US 6,594,242 B1).

Referring to claim 1, Neumann discloses a multi-mode wireless communication device (abstract, and paragraph 0004, "dual mode"), comprising

a first baseband co-processor (paragraphs 6, 19-22, “TDMA co-processor”, “slave baseband co-processor") configured to execute low-level stack operations of a first wireless communications protocol employed within a first wireless communications network (figures 2-4, 6B, 8B, and paragraphs 6, 19-21, 25 and 29 “TDMA co-processor”, “TDMA IS-136 network”, “slave baseband co-processor", “slave baseband co-processor . . . to provide baseband functions according to a second telecommunications standard”, “TDMA BB processor”, “TDMA co-processor provides TDMA CODEC", note the connection of TDMA BB processor to the TDMA RF where TDMA is the first network, thus, the TDMA processor executes low-level (antenna/RF/physical level) stack operations);

a host baseband processor (Fig. 3 and paragraphs 20-22, “GSM master processor”) configured to execute a set of protocol stack operations of a second wireless communications protocol (Figs. 5A-6B, paragraphs 20-22, 29, particularly paragraph 29, lines 2-3, “GSM network”, “the GSM master processor 202 controls all GSM system related functions”) employed within a second wireless communications network (figures 1-4, paragraphs 20-22, “GSM network”)

and higher-level stack operations of said first wireless communications protocol (figures 2-3 and paragraphs 21-22, 29, “GSM master processor controls audio input/output … in both first and second modes”, note that audio is an application layer thus a higher-level stack operation and the GSM processor controls it both for GSM and TDMA network);

and a data communication channel (Figure 2-3, and paragraph 27, “glue logic”) between said host baseband processor (Fig. 2-3, “GSM BB processor”) and said first baseband co-processor (Fig. 2, “TDMA BB processor”) capable of carrying data received by said multi-mode

wireless communication device from said first wireless communications network or sent by said multi-mode wireless communication device through said first wireless communications network (figures 1-4, paragraphs 22-26);

Neumann further teaches one or both of said first baseband co-processor and said host baseband processor (the GSM processor) enabling ***selecting*** between bearers utilizing low-level stack operations and set of protocol stack operations (paragraph 37, "GSM master processor … selects the mode of operation, e.g., whether GSM mode or TDMA").

Neumann is silent about switching between bearers and maintaining bearer connections during switching as claimed.

However, the concepts of switching between different networks and hence different protocols and maintaining the connection are conventional in the art. Specifically, during a handoff process from a first network using a first protocol to a second network using a second protocol a switch between the networks has to take place. Consequently, the switch between different networks requires switching between different protocols.

Kransmo teaches a handover and roaming of a dual mode wireless terminal from a 3G network to a 2G network (abstract, col. 1, lines 50-67, and col. 2, lines 18-21, "handover and roaming of a wireless terminal from a third generation . . . to a second generation (2G) communication system", "operating protocols", note that a dual-mode mobile terminal capable of operating and roaming in two different systems is provided, where the handover process from a 3G system to a 2G inherently allows the dual mode wireless terminal to switch networks and maintain connection with at least one of the 2G and/or 3G networks and thus maintaining connection bearer a connection)

It would have been obvious to one of the ordinary skill in the art at the time of invention to modify the system of Neumann by incorporating the teachings of Kransmo and consequently modifying one or both of processors of Neumann (e.g., the GSM processor) to enable switching between bearers (since during handover a network switch/exchange takes place and thus a protocol switch takes place) utilizing low-level stack operations and set of protocol stack operations and maintain bearer connections (since in a handover process the wireless terminal maintains connection with at least one of the networks and thus a connection at least with one protocol/bearer of the two networks is maintained), for the purpose allowing the multi-mode wireless device to roam between different networks and thus user convenience.

Referring to claim 2, the combination of Neumann/Kransmo disclose the device of claim 1, and further disclose the set of protocol stack operations comprises a complete set of protocol stack operations of said second wireless communications protocol (paragraph 29).

Referring to claim 4, the combination of Neumann/Kransmo disclose the device of claim 3, and further disclose the set of protocol stack operations comprises higher-level protocol stack operations of said second wireless communications protocol (Neumann, figures 2-8B, paragraph 29).

Referring to claim 5, the combination of Neumann/Kransmo discloses the device of claim 1, and further discloses the low-level stack operations include physical layer functions (see the rejection of claim 1 above and figures 2-4, 6A, 6B and 8B, note the antenna in figure 2-3, 6A, 6B and 8B) and inherently bearer-specific stack functions peculiar to said first wireless communications protocol (Neumann, Figures 2-3 and 5A-6B and their corresponding paragraphs, “TDMA RF”, “GSM RF”).

Referring to claim 6, the combination of Neumann/Kransmo disclose the device of claim 5, and further disclose higher-level stack functions comprise stack functions common to said first and second wireless communication protocols (Neumann, paragraph 21, note that audio is common for both protocols).

Referring to claim 7, the combination of Neumann/Kransmo discloses the device of claim 1, and further discloses host baseband processor is further configured to execute application-layer functions (Neumann, paragraphs 21).

Referring to claim 12, the combination of Neumann/Kransmo disclose the device of claim 1, and further disclose first wireless communications protocol comprises WCDMA and said second wireless communications protocol comprises GSM (Kransmo, col. 2, line 59 through col. 3, line 15).

Referring to claims 13-14 and 16-18, claims 13-14 and 16-18 recite features analogous to the features of claims 1-2 and 4-6 (as rejected above). Thus, the combination of Neumann/Kransmo discloses all elements of claims 13-14 and 16-18 (please see the rejection of claim 1-2 and 4-6 above).

9. Claims 27-28 are rejected under 35 U.S.C. 103(a) as being unpatentable over Neumann et al (U.S. Pub. No. 2002/0141441 A1) in view of Perlman (US 2002/0114360 A1).

Referring to claim 27, Neumann discloses a multi-mode wireless communication device (abstract, and paragraph 0004, “dual mode”), comprising

a first baseband co-processor (paragraphs 6, 19-22, “TDMA co-processor”, “slave baseband co-processor") configured to execute low-level stack operations of a first wireless communications protocol employed within a first wireless communications network (figures 2-4, 6B, 8B, and paragraphs 6, 19-21, 25 and 29 “TDMA co-processor”, “TDMA IS-136 network”, “slave baseband co-processor", “slave baseband co-processor . . . to provide baseband functions according to a second telecommunications standard”, “TDMA BB processor”, “TDMA co-processor provides TDMA CODEC", note the connection of TDMA BB processor to the TDMA RF where TDMA is the first network, thus, the TDMA processor executes low-level (antenna/RF/physical level) stack operations);

a host baseband processor (Fig. 3 and paragraphs 20-22, “GSM master processor”) configured to execute a set of protocol stack operations of a second wireless communications protocol (Figs. 5A-6B, paragraphs 20-22, 29, particularly paragraph 29, lines 2-3, “GSM network”, “the GSM master processor 202 controls all GSM system related functions”) employed within a second wireless communications network (figures 1-4, paragraphs 20-22, “GSM network”), and

higher-level stack operations of said first wireless communications protocol (figures 2-3 and paragraphs 21-22, 29, “GSM master processor controls audio input/output … in both first and second modes”, note that audio is an application layer thus a higher-level stack operation and the GSM processor controls it both for GSM and TDMA network); and

a data communication channel (Figure 2-3, and paragraph 27, “glue logic”) between said host baseband processor (Fig. 2-3, “GSM BB processor”) and said first baseband co-processor (Fig. 2, “TDMA BB processor”) capable of carrying data received by said multi-mode wireless

communication device from said first wireless communications network or sent by said multi-mode wireless communication device through said first wireless communications network (figures 1-4, paragraphs 22-26);

wherein said host baseband processor comprises a common stack functions module communicating to one or more application modules, said common stack functions module executing functions common to said first and second wireless communications protocols (Figures 2-3, 5A-8B and paragraph 20-21 and 29, "***The master processor also controls a variety of shared functions, including, for example, RF front end, display, keypad***", "In addition, the GSM master processor 202 controls the RF front end 216, the power supply 206, and the input/output functions", "GSM master processor controls audio input/output", note that the GSM master processor controls GSM system functions and also functions that are common to both GSM processor and TDMA processor, e.g., input/output, audio, keypad and power supply. For example, audio is common for both GSM and TDMA protocols and the audio function for both networks is controlled by the GSM processor. Thus, the GSM processor has a common module (common stack functions module) to provide audio function for both GSM and TDMA protocols regardless of which network the device is in communications with); and

a first bearer-specific module for implementing bearer-specific stack functions related to said first wireless communications protocol (paragraphs 20, 25 and 29, "Functions dedicated to the GSM master processor include GSM system function and control of GSM radio frequency", "The GSM master processor 202 controls all GSM system related functions and the GSM RF unit 214", note the GSM master processor controls GSM system function. GSM system

functions are the bearer-specific stack function. They are specific to GSM system functions);

wherein said first baseband co-processor comprises a first physical layer module for implementing physical function (Figures 2-4, 6A, 6B and 8B and the corresponding paragraphs, particularly paragraphs 20-21, 29, 45, 50, “the TDMA co-processor 204 controls TDMA system related functions and the TDMA RF unit 218”, “slave co-processor controls ... TDMA RF functions”, note that RF is within the physical layer and the TDMA co-processor controls it, thus the TDMA co-processor must have a module to do so, and that module can be called the a first physical layer module).

Neumann further discloses memory units (buffers) within each one of the processors (Figures 2-3, 6A, 6B, 8A and 8B and the corresponding paragraphs, particularly figure 2, “shared memory”).

Neumann does not specifically disclose that these buffers are located such that in the first baseband co-processor, a first buffer is in communication with the first physical layer module and the first bearer-specific module, and the in the host baseband processor, a second buffer is in communication with the first bearer-specific module and the common stack functions module.

However, the concept of providing buffers between modules is conventional in the art. Particularly, in network engineering buffers are provided between network nodes to prevent traffic congestion and equalize the data flow among network nodes.

Perlman discloses that buffers are provided to interconnect system module to improve system performance (Fig. 3, 5 and Par. 71, “buffers may be provided in this manner between any of the system modules”).

Therefore, it would have been obvious to one of the ordinary skill in the art at the time of invention to modify the device of Neumann in the format claimed, for the purpose of equalizing the data flow between modules and preventing network traffic congestion, and thus providing an efficient communication device.

Referring to claim 28, the combination of Neumann/Perlman discloses the device according to claim 27, and further discloses the host baseband processor comprises a common stack functions module and one or more application modules, said common stack functions module executing functions common to said first and second wireless communications protocols (Figures 2-3, 5A-8B and paragraph 21).

10. Claims 29-30 are rejected under 35 U.S.C. 103(a) as being unpatentable over Neumann et al (U.S. Pub. No. 2002/0141441 A1) in view of Kransmo (US 6,594,242 B1), and further in view of Perlman (US 2002/0114360 A1).

Referring to claim 29, Neumann discloses a multi-mode wireless communication device (abstract, and paragraph 0004, “dual mode”),

comprising a first baseband co-processor (paragraphs 6, 19-22, “TDMA co-processor”, “slave baseband co-processor") configured to execute low-level stack operations of a first wireless communications protocol employed within a first wireless communications network (figures 2-4, 6B, 8B, and paragraphs 6, 19-21, 25 and 29 “TDMA co-processor”, “TDMA IS-136 network”, “slave baseband co-processor", “slave baseband co-processor . . . to provide baseband functions according to a second telecommunications standard”, “TDMA BB processor”, “TDMA co-processor provides TDMA CODEC", “TDMA co-processor 204 controls TDMA system

related functions and the TDMA RF unit 218", note the connection of TDMA BB processor to the TDMA RF where TDMA is the first network, thus, the TDMA processor executes low-level (antenna/RF/physical level) stack operations);

a host baseband processor (Fig. 3 and paragraphs 20-22, "GSM master processor") configured to execute a set of protocol stack operations of a second wireless communications protocol (Figs. 5A-6B, paragraphs 20-22, 29, particularly paragraph 29, lines 2-3, "GSM network", "the GSM master processor 202 controls all GSM system related functions") employed within a second wireless communications network (figures 1-4, paragraphs 20-22, "GSM network");

and higher-level stack operations of said first wireless communications protocol (figures 2-3 and paragraphs 21-22, 29, "GSM master processor controls audio input/output … in both first and second modes", note that audio is an application layer thus a higher-level stack operation and the GSM processor controls it both for GSM and TDMA network);

and a data communication channel (Figure 2-3, and paragraph 27, "glue logic") between said host baseband processor (Fig. 2-3, "GSM BB processor") and said first baseband co-processor (Fig. 2, "TDMA BB processor") capable of carrying data received by said multi-mode wireless communication device from said first wireless communications network or sent by said multi-mode wireless communication device through said first wireless communications network (figures 1-4, paragraphs 22-26);

<u>wherein said host baseband processor comprises a first bearer-specific module for implementing bearer-specific stack functions related to said first wireless communications protocol (paragraphs 20, 25 and 29, "Functions dedicated to the GSM master processor include</u>

GSM system function and control of GSM radio frequency", "The GSM master processor 202 controls all GSM system related functions and the GSM RF unit 214", note the GSM master processor controls GSM system function. GSM system functions are the bearer-specific stack function. They are specific to GSM system functions);

wherein said first baseband co-processor comprises a first physical layer module for implementing physical function (Figures 2-4, 6A, 6B and 8B and the corresponding paragraphs, particularly paragraphs 20-21, 29, 45, 50, "co-processor 204 controls … TDMA RF unit 218").

Neumann further discloses memory units (buffers) within each one of the processors (Figures 2-3, 6A, 6B, 8A and 8B and the corresponding paragraphs, particularly figure 2, "shared memory").

Neumann does not specifically disclose that these buffers are located such that in the first baseband co-processor, a first buffer is in communication with the first physical layer module and the first bearer-specific module.

However, the concept of providing buffers between modules is conventional in the art. Particularly, in network engineering buffers are provided between network nodes to prevent traffic congestion and equalize the data flow among network nodes.

Perlman discloses that buffers are provided to interconnect system module to improve system performance (Fig. 3, 5 and Par. 71, "buffers may be provided in this manner between any of the system modules").

Therefore, it would have been obvious to one of the ordinary skill in the art at the time of invention to modify the device of Neumann in the format claimed, for the purpose of equalizing

the data flow between modules and preventing network traffic congestion, and thus providing an efficient communication device.

Neumann further teaches one or both of said first baseband co-processor and said host baseband processor (the GSM processor) enabling ***selecting*** between bearers utilizing low-level stack operations and set of protocol stack operations (paragraph 37, "GSM master processor … selects the mode of operation, e.g., whether GSM mode or TDMA").

The combination of Neumann/Perlman does not specifically disclose switching between bearers and maintaining bearer connections during switching as claimed.

However, the concepts of switching between different networks and hence different protocols and maintaining the connection are conventional in the art. Specifically, during a handoff process from a first network using a first protocol to a second network using a second protocol a switch between the networks has to take place. Consequently, the switch between different networks requires switching between different protocols.

Kransmo teaches a handover and roaming of a dual mode wireless terminal from a 3G network to a 2G network (abstract, col. 1, lines 50-67, and col. 2, lines 18-21, "handover and roaming of a wireless terminal from a third generation . . . to a second generation (2G) communication system", "operating protocols", note that a dual-mode mobile terminal capable of operating and roaming in two different systems is provided, where the handover process from a 3G system to a 2G allows the dual mode wireless terminal to switch networks and maintain connection with the 2G and/or 3G networks and thus maintaining connection bearer a connection).

It would have been obvious to one of the ordinary skill in the art at the time of invention to modify the system of Neumann/Perlman by incorporating the teachings of Kransmo and consequently modifying one or both of processors of Neumann (e.g., the GSM processor) to enable switching between bearers (since during handover a network switch/exchange takes place and thus a protocol switch takes place) utilizing low-level stack operations and set of protocol stack operations and maintain bearer connections (since in a handover process the wireless terminal maintains connection with at least one of the networks and thus a connection at least with one protocol/bearer of the two networks is maintained), for the purpose allowing the multi-mode wireless device to roam between different networks and thus user convenience.

Referring to claim 30, Neumann discloses a multi-mode wireless communication device (abstract, and paragraph 0004, “dual mode”),

comprising a first baseband co-processor (paragraphs 6, 19-22, “TDMA co-processor”, “slave baseband co-processor") configured to execute low-level stack operations of a first wireless communications protocol employed within a first wireless communications network (figures 2-4, 6B, 8B, and paragraphs 6, 19-21, 25 and 29 “TDMA co-processor”, “TDMA IS-136 network”, “slave baseband co-processor", “slave baseband co-processor . . . to provide baseband functions according to a second telecommunications standard”, “TDMA BB processor”, “TDMA co-processor provides TDMA CODEC", note the connection of TDMA BB processor to the TDMA RF where TDMA is the first network, thus, the TDMA processor executes low-level (antenna/RF/physical level) stack operations);

a host baseband processor (Fig. 3 and paragraphs 20-22, "GSM master processor") configured to execute a set of protocol stack operations of a second wireless communications protocol (Figs. 5A-6B, paragraphs 20-22, 29, particularly paragraph 29, lines 2-3, "GSM network", "the GSM master processor 202 controls all GSM system related functions") employed within a second wireless communications network (figures 1-4, paragraphs 20-22, "GSM network")

and higher-level stack operations of said first wireless communications protocol (figures 2-3 and paragraphs 21-22, 29, "GSM master processor controls audio input/output … in both first and second modes", note that audio is an application layer thus a higher-level stack operation and the GSM processor controls it both for GSM and TDMA network);

and a data communication channel (Figure 2-3, and paragraph 27, "glue logic") between said host baseband processor (Fig. 2-3, "GSM BB processor") and said first baseband co-processor (Fig. 2, "TDMA BB processor") capable of carrying data received by said multi-mode wireless communication device from said first wireless communications network or sent by said multi-mode wireless communication device through said first wireless communications network (figures 1-4, paragraphs 22-26);

<u>wherein said host baseband processor comprises a first bearer-specific module for implementing bearer-specific stack functions related to said first wireless communications protocol (paragraphs 20, 25 and 29, "Functions dedicated to the GSM master processor include GSM system function and control of GSM radio frequency", "The GSM master processor 202 controls all GSM system related functions and the GSM RF unit 214", note the GSM master processor controls GSM system function. GSM system functions are the bearer-specific stack</u>

function. They are specific to GSM system functions); and

wherein said first baseband co-processor comprises a first physical layer module for implementing physical function (Figures 2-4, 6A, 6B and 8B and the corresponding paragraphs, particularly paragraphs 20-21, 29, 45, 50, "TDMA co-processor 204 controls … TDMA RF unit 218").

Neumann further discloses memory units (buffers) within each one of the processors (Figures 2-3, 6A, 6B, 8A and 8B and the corresponding paragraphs, particularly figure 2, "shared memory").

Neumann does not specifically disclose that these buffers are located such that in the first baseband co-processor, a first buffer is in communication with the first physical layer module and the first bearer-specific module, and the in the host baseband processor, a second buffer is in communication with the first bearer-specific module and the common stack functions module.

However, the concept of providing buffers between modules is conventional in the art. Particularly, in network engineering buffers are provided between network nodes to prevent traffic congestion and equalize the data flow among network nodes.

Perlman discloses that buffers are provided to interconnect system module to improve system performance (Fig. 3, 5 and Par. 71, "buffers may be provided in this manner between any of the system modules").

Therefore, it would have been obvious to one of the ordinary skill in the art at the time of invention to modify the device of Neumann in the format claimed, for the purpose of equalizing the data flow between modules and preventing network traffic congestion, and thus providing an efficient communication device.

The combination of Neumann/Perlman further teaches one or both of said first baseband co-processor and said host baseband processor (the GSM processor) enabling ***selecting*** between bearers utilizing low-level stack operations and set of protocol stack operations (Neumann, paragraph 37, "GSM master processor … selects the mode of operation, e.g., whether GSM mode or TDMA").

The combination does not specifically disclose switching between bearers and maintaining bearer connections during switching as claimed.

However, the concepts of switching between different networks and hence different protocols and maintaining the connection are conventional in the art. Specifically, during a handoff process from a first network using a first protocol to a second network using a second protocol a switch between the networks has to take place. Consequently, the switch between different networks requires switching between different protocols.

Kransmo teaches a handover and roaming of a dual mode wireless terminal from a 3G network to a 2G network (abstract, col. 1, lines 50-67, and col. 2, lines 18-21, "handover and roaming of a wireless terminal from a third generation . . . to a second generation (2G) communication system", "operating protocols", note that a dual-mode mobile terminal capable of operating and roaming in two different systems is provided, where the handover process from a 3G system to a 2G allows the dual mode wireless terminal to switch networks and maintain connection with at least one of the 2G and/or 3G networks and thus maintaining connection bearer a connection).

It would have been obvious to one of the ordinary skill in the art at the time of invention to modify the combination by incorporating the teachings of Kransmo and consequently modifying one or both of processors of Neumann (e.g., the GSM processor) to enable switching between bearers (since during handover a network switch/exchange takes place and thus a protocol switch takes place) utilizing low-level stack operations and set of protocol stack operations and maintain bearer connections (since in a handover process the wireless terminal maintains connection with at least one of the networks and thus a connection at least with one protocol/bearer of the two networks is maintained), for the purpose allowing the multi-mode wireless device to roam between different networks and thus user convenience.

11. Claims 3 and 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Neumann et al (U.S. Pub. No. 2002/0141441 A1), in view of Kransmo (US 6,594,242 B1), and further in view of Schmidt (US Pub. No. 2003/0067894 A1).

Referring to claim 3, the combination of Neumann/Kransmo discloses the device of claim 1.

The combination does not disclose a second baseband processor in the format claimed.

Schmidt discloses second baseband processor in communication with a host baseband processor via a data communication channel (Figures 1A-2, abstract, paragraphs 0004, 0010-0011, 23-25, 27-29, 31, 35, 40, 44-46, 49, and 51).

It would have been obvious to one of the ordinary skill in the art at the time of the invention to modify the combination by incorporating the teachings of Schmidt, for the purpose of dividing operations among three processors and thus a more efficient wireless terminal.

Referring to claim 15, claim 15 recites features analogous to the features of claim 3 (as rejected above). Thus, the combination of Neumann/Kransmo discloses all elements of claims 15 (please see the rejection of claim 1-2 and 4-6 above).

Conclusion

12. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Fred A. Casca whose telephone number is (571) 272-7918. The examiner can normally be reached on Monday through Friday from 9 to 5.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Paul Harper, can be reached at (571) 272-7605. The fax phone number for the organization where this application or proceeding is assigned is (571) 273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR

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FAC

/Charles N. Appiah/
Supervisory Patent Examiner, Art Unit 2617